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SEQUENCE LISTING

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Babinski, Kazimierz
McGill University

<120> DNA ENCODING A HUMAN PROTON-GATED ION CHANNEL AND USES
THEREOF

<130> 641050.90021

<140> CA PCT/CA98/01016

<141> 1998-10-29

<150> US09/530,233

<151> 1997-10-29

<160> 5

<170> PatentIn Ver. 2.0

<210> 1

<211> 1732

<212> DNA

<213> Homo sapiens

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                        1                      5                      10

cgg cgg cag ccc tcg gac atc cgc gtg ttc gcc agc aac tgc tcg atg 99
Arg Arg Gln Pro Ser Asp Ile Arg Val Phe Ala Ser Asn Cys Ser Met
                        15                      20                      25

cac ggg ctg ggc cac gtc ttc ggg cca ggc agc ctg agc ctg cgc cgg 147
His Gly Leu Gly His Val Phe Gly Pro Gly Ser Leu Ser Leu Arg Arg
                        30                      35                      40

ggg atg tgg gca gcg gcc gtg gtc ctg tca gtg gcc acc ttc ctc tac 195
Gly Met Trp Ala Ala Ala Val Val Leu Ser Val Ala Thr Phe Leu Tyr
                        45                      50                      55

cag gtg gct gag agg gtg cgc tac tac agg gag ttc cac cac cag act 243
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|---|-----|
| Gln Val Ala Glu Arg Val Arg Tyr Tyr Arg Glu Phe His His Gln Thr | |
| 60 65 70 | |
| gcc ctg gat gag cga gaa agc cac cgg ctc gtc ttc ccg gct gtc acc | 291 |
| Ala Leu Asp Glu Arg Glu Ser His Arg Leu Val Phe Pro Ala Val Thr | |
| 75 80 85 90 | |
| ctg tgc aac atc aac cca ctg cgc cgc tcg cgc cta acg ccc aac gac | 339 |
| Leu Cys Asn Ile Asn Pro Leu Arg Arg Ser Arg Leu Thr Pro Asn Asp | |
| 95 100 105 | |
| ctg cac tgg gct ggg tct gcg ctg ctg ggc ctg gat ccc gca gag cac | 387 |
| Leu His Trp Ala Gly Ser Ala Leu Leu Gly Leu Asp Pro Ala Glu His | |
| 110 115 120 | |
| gcc gcc ttc ctg cgc gcc ctg ggc cgg ccc cct gca ccg ccc ggc ttc | 435 |
| Ala Ala Phe Leu Arg Ala Leu Gly Arg Pro Pro Ala Pro Pro Gly Phe | |
| 125 130 135 | |
| atg ccc agt ccc acc ttt gac atg gcg caa ctc tat gcc cgt gct ggg | 483 |
| Met Pro Ser Pro Thr Phe Asp Met Ala Gln Leu Tyr Ala Arg Ala Gly | |
| 140 145 150 | |
| cac tcc ctg gat gac atg ctg ctg gac tgt cgc ttc cgt ggc caa cct | 531 |
| His Ser Leu Asp Asp Met Leu Leu Asp Cys Arg Phe Arg Gly Gln Pro | |
| 155 160 165 170 | |
| tgt ggg cct gag aac ttc acc acg atc ttc acc cgg atg gga aag tgc | 579 |
| Cys Gly Pro Glu Asn Phe Thr Thr Ile Phe Thr Arg Met Gly Lys Cys | |
| 175 180 185 | |
| tac aca ttt aac tct ggc gct gat ggg gca gag ctg ctc acc act act | 627 |
| Tyr Thr Phe Asn Ser Gly Ala Asp Gly Ala Glu Leu Leu Thr Thr Thr | |
| 190 195 200 | |
| agg ggt ggc atg ggc aat ggg ctg gac atc atg ctg gac gtg cag cag | 675 |
| Arg Gly Gly Met Gly Asn Gly Leu Asp Ile Met Leu Asp Val Gln Gln | |
| 205 210 215 | |
| gag gaa tat cta cct gtg tgg agg gac aat gag gag acc ccg ttt gag | 723 |
| Glu Glu Tyr Leu Pro Val Trp Arg Asp Asn Glu Glu Thr Pro Phe Glu | |
| 220 225 230 | |
| gtg ggg atc cga gtg cag atc cac agc cag gag gag ccg ccc atc atc | 771 |
| Val Gly Ile Arg Val Gln Ile His Ser Gln Glu Glu Pro Pro Ile Ile | |
| 235 240 245 250 | |
| gat cag ctg ggc ttg ggg gtg tcc ccg ggc tac cag acc ttt gtt tct | 819 |

| | |
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| Asp Gln Leu Gly Leu Gly Val Ser Pro Gly Tyr Gln Thr Phe Val Ser | |
| 255 260 265 | |
| tgc cag cag cag cag ctg agc ttc ctg cca ccg ccc tgg ggc gat tgc | 867 |
| Cys Gln Gln Gln Gln Leu Ser Phe Leu Pro Pro Pro Trp Gly Asp Cys | |
| 270 275 280 | |
| agt tca gca tct ctg aac ccc aac tat gag cca gag ccc tct gat ccc | 915 |
| Ser Ser Ala Ser Leu Asn Pro Asn Tyr Glu Pro Glu Pro Ser Asp Pro | |
| 285 290 295 | |
| cta ggc tcc ccc agc ccc agc ccc agc cct ccc tat acc ctt atg ggg | 963 |
| Leu Gly Ser Pro Ser Pro Ser Pro Ser Pro Pro Tyr Thr Leu Met Gly | |
| 300 305 310 | |
| tgt cgc ctg gcc tgc gaa acc cgc tac gtg gct cgg aag tgc ggc tgc | 1011 |
| Cys Arg Leu Ala Cys Glu Thr Arg Tyr Val Ala Arg Lys Cys Gly Cys | |
| 315 320 325 330 | |
| cga atg gtg tac atg cca ggc gac gtg cca gtg tgc agc ccc cag cag | 1059 |
| Arg Met Val Tyr Met Pro Gly Asp Val Pro Val Cys Ser Pro Gln Gln | |
| 335 340 345 | |
| tac aag aac tgt gcc cac ccg gcc ata gat gcc atc ctt cgc aag gac | 1107 |
| Tyr Lys Asn Cys Ala His Pro Ala Ile Asp Ala Ile Leu Arg Lys Asp | |
| 350 355 360 | |
| tcg tgc gcc tgc ccc aac ccg tgc gcc agc acg cgc tac gcc aag gag | 1155 |
| Ser Cys Ala Cys Pro Asn Pro Cys Ala Ser Thr Arg Tyr Ala Lys Glu | |
| 365 370 375 | |
| ctc tcc atg gtg cgg atc ccg agc cgc gcc gcc gcg cgc ttc ctg gcc | 1203 |
| Leu Ser Met Val Arg Ile Pro Ser Arg Ala Ala Ala Arg Phe Leu Ala | |
| 380 385 390 | |
| cgg aag ctc aac cgc agc gag gcc tac atc gcg gag aac gtg ctg gcc | 1251 |
| Arg Lys Leu Asn Arg Ser Glu Ala Tyr Ile Ala Glu Asn Val Leu Ala | |
| 395 400 405 410 | |
| ctg gac atc ttc ttt gag gcc ctc aac tat gag acc gtg gag cag aag | 1299 |
| Leu Asp Ile Phe Phe Glu Ala Leu Asn Tyr Glu Thr Val Glu Gln Lys | |
| 415 420 425 | |
| aag gcc tat gag atg tca gag ctg ctt ggt gac att ggg ggc cag atg | 1347 |
| Lys Ala Tyr Glu Met Ser Glu Leu Leu Gly Asp Ile Gly Gly Gln Met | |
| 430 435 440 | |
| ggc ctt ttc atc ggg gcc agc ctg ctc acc atc ctc gag atc cta gac | 1395 |

Gly Leu Phe Ile Gly Ala Ser Leu Leu Thr Ile Leu Glu Ile Leu Asp
 445 450 455
 tac .ctc tgt gag gtg ttc cga gac aag gtc ctg gga tat ttc tgg aac 1443
 Tyr Leu Cys Glu Val Phe Arg Asp Lys Val Leu Gly Tyr Phe Trp Asn
 460 465 470
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 Arg Gln His Ser Gln Arg His Ser Ser Thr Asn Leu Leu Gln Glu Gly
 475 480 485 490
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 Leu Gly Ser His Arg Thr Gln Val Pro His Leu Ser Leu Gly Pro Arg
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 Pro Pro Thr Pro Pro Cys Ala Val Thr Lys Thr Leu Ser Ala Ser His
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 Arg Thr Cys Tyr Leu Val Thr Gln Leu
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<210> 2
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 <212> PRT
 <213> Homo sapiens

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 35 40 45
 Val Val Leu Ser Val Ala Thr Phe Leu Tyr Gln Val Ala Glu Arg Val
 50 55 60
 Arg Tyr Tyr Arg Glu Phe His His Gln Thr Ala Leu Asp Glu Arg Glu
 65 70 75 80

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | His | Arg | Leu | Val | Phe | Pro | Ala | Val | Thr | Leu | Cys | Asn | Ile | Asn | Pro | 85 | 90 | 95 | |
| Leu | Arg | Arg | Ser | Arg | Leu | Thr | Pro | Asn | Asp | Leu | His | Trp | Ala | Gly | Ser | 100 | 105 | 110 | |
| Ala | Leu | Leu | Gly | Leu | Asp | Pro | Ala | Glu | His | Ala | Ala | Phe | Leu | Arg | Ala | 115 | 120 | 125 | |
| Leu | Gly | Arg | Pro | Pro | Ala | Pro | Pro | Gly | Phe | Met | Pro | Ser | Pro | Thr | Phe | 130 | 135 | 140 | |
| Asp | Met | Ala | Gln | Leu | Tyr | Ala | Arg | Ala | Gly | His | Ser | Leu | Asp | Asp | Met | 145 | 150 | 155 | 160 |
| Leu | Leu | Asp | Cys | Arg | Phe | Arg | Gly | Gln | Pro | Cys | Gly | Pro | Glu | Asn | Phe | 165 | 170 | 175 | |
| Thr | Thr | Ile | Phe | Thr | Arg | Met | Gly | Lys | Cys | Tyr | Thr | Phe | Asn | Ser | Gly | 180 | 185 | 190 | |
| Ala | Asp | Gly | Ala | Glu | Leu | Leu | Thr | Thr | Thr | Arg | Gly | Gly | Met | Gly | Asn | 195 | 200 | 205 | |
| Gly | Leu | Asp | Ile | Met | Leu | Asp | Val | Gln | Gln | Glu | Glu | Tyr | Leu | Pro | Val | 210 | 215 | 220 | |
| Trp | Arg | Asp | Asn | Glu | Glu | Thr | Pro | Phe | Glu | Val | Gly | Ile | Arg | Val | Gln | 225 | 230 | 235 | 240 |
| Ile | His | Ser | Gln | Glu | Glu | Pro | Pro | Ile | Ile | Asp | Gln | Leu | Gly | Leu | Gly | 245 | 250 | 255 | |
| Val | Ser | Pro | Gly | Tyr | Gln | Thr | Phe | Val | Ser | Cys | Gln | Gln | Gln | Gln | Leu | 260 | 265 | 270 | |
| Ser | Phe | Leu | Pro | Pro | Pro | Trp | Gly | Asp | Cys | Ser | Ser | Ala | Ser | Leu | Asn | 275 | 280 | 285 | |
| Pro | Asn | Tyr | Glu | Pro | Glu | Pro | Ser | Asp | Pro | Leu | Gly | Ser | Pro | Ser | Pro | 290 | 295 | 300 | |
| Ser | Pro | Ser | Pro | Pro | Tyr | Thr | Leu | Met | Gly | Cys | Arg | Leu | Ala | Cys | Glu | 305 | 310 | 315 | 320 |
| Thr | Arg | Tyr | Val | Ala | Arg | Lys | Cys | Gly | Cys | Arg | Met | Val | Tyr | Met | Pro | 325 | 330 | 335 | |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| Gly | Asp | Val | Pro | Val | Cys | Ser | Pro | Gln | Gln | Tyr | Lys | Asn | Cys | Ala | His | | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | | |
| Pro | Ala | Ile | Asp | Ala | Ile | Leu | Arg | Lys | Asp | Ser | Cys | Ala | Cys | Pro | Asn | | | |
| | | 355 | | | | | 360 | | | | | 365 | | | | | | |
| Pro | Cys | Ala | Ser | Thr | Arg | Tyr | Ala | Lys | Glu | Leu | Ser | Met | Val | Arg | Ile | | | |
| | 370 | | | | | 375 | | | | | 380 | | | | | | | |
| Pro | Ser | Arg | Ala | Ala | Ala | Arg | Phe | Leu | Ala | Arg | Lys | Leu | Asn | Arg | Ser | | | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | | | |
| Glu | Ala | Tyr | Ile | Ala | Glu | Asn | Val | Leu | Ala | Leu | Asp | Ile | Phe | Phe | Glu | | | |
| | | | 405 | | | | | | 410 | | | | | 415 | | | | |
| Ala | Leu | Asn | Tyr | Glu | Thr | Val | Glu | Gln | Lys | Lys | Ala | Tyr | Glu | Met | Ser | | | |
| | | 420 | | | | | | 425 | | | | | 430 | | | | | |
| Glu | Leu | Leu | Gly | Asp | Ile | Gly | Gly | Gln | Met | Gly | Leu | Phe | Ile | Gly | Ala | | | |
| | 435 | | | | | 440 | | | | | | 445 | | | | | | |
| Ser | Leu | Leu | Thr | Ile | Leu | Glu | Ile | Leu | Asp | Tyr | Leu | Cys | Glu | Val | Phe | | | |
| | 450 | | | | 455 | | | | | | 460 | | | | | | | |
| Arg | Asp | Lys | Val | Leu | Gly | Tyr | Phe | Trp | Asn | Arg | Gln | His | Ser | Gln | Arg | | | |
| 465 | | | | 470 | | | | | 475 | | | | | 480 | | | | |
| His | Ser | Ser | Thr | Asn | Leu | Leu | Gln | Glu | Gly | Leu | Gly | Ser | His | Arg | Thr | | | |
| | | | 485 | | | | | 490 | | | | | 495 | | | | | |
| Gln | Val | Pro | His | Leu | Ser | Leu | Gly | Pro | Arg | Pro | Pro | Thr | Pro | Pro | Cys | | | |
| | | 500 | | | | | | 505 | | | | | 510 | | | | | |
| Ala | Val | Thr | Lys | Thr | Leu | Ser | Ala | Ser | His | Arg | Thr | Cys | Tyr | Leu | Val | | | |
| | 515 | | | | | | 520 | | | | | 525 | | | | | | |
| Thr | Gln | Leu | | | | | | | | | | | | | | | | |
| | 530 | | | | | | | | | | | | | | | | | |

<210> 3
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<220>
 <221> PEPTIDE

<222> (2)
<223> "Xaa = unidentified amino acid."

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<223> "Xaa = unidentified amino acid."

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Ser

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<213> Artificial Sequence

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<223> Description of Artificial Sequence:
Oligonucleotide Primer

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<210> 5
<211> 21
<212> DNA
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<220>

<223> Description of Artificial Sequence:
Oligonucleotide Primer

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